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Notes on the Poisonous Plants of Nebraska.

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Notes on the Poisonous Plants of Nebraska.

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For the past seventeen or eighteen years I have been studying more or less carefully the flora of Nebraska, and during this time my attention has been called frequently to the poisonous plants of the State. In some seasons many domestic animals—cattle, horses, and sheep—are destroyed by what is supposed to be their feeding upon poisonous plants. The matter has become of such importance that a little more than a year ago an appropriation was made for the special purpose of investigating some of these cases of sudden death of animals. In aiding in this investigation it became necessary for me to run over the plants of the State with a good deal of care and to enumerate those which are reputed to be poisonous or are suspected of being so. This has resulted in the preparation of a paper which I presented to the State Board of Agriculture for publication in their forthcoming Report. From this paper I have prepared the following general summary.

No attempt has yet been made to enumerate all of the lower plants reputed to be harmful. It is known that among the fungi there are many species which are poisonous, but the state of our knowledge in regard to these is such that little can be said in regard to them. This is all the more excusable since these lower plants are in fewer cases responsible for sudden deaths among domestic animals than among human beings.

The Joint-rushes (*Equisetum sp.*) are quite abundant in the State, and, while little or no attentions has been directed to their poisonous properties, it is in my opinion quite likely that they have caused serious injury to domestic animals in the past few years.

In the Lily Family the Death Camas (*Zygadenus venenosus*) occurs in the northwestern part of the State

Bot. 26D21 Feb. 25

p 45832

along with other species, and complaints have come to the State University in regard to these. As is well known, the species named is very poisonous, and in the Northwest has wrought great injury.

In some parts of the West the Sand Lily (*Leucocrinum montanum*) has been accused of poisoning domestic animals, but, although this grows abundantly in central and western Nebraska, I have yet to learn of any case where the plant has even been suspected. I doubt very much whether it is a poisonous plant.

In the Iris Family the common little blue-eyed grass (*Sisyrinchium campestre*) has been accused of being poisonous to the touch, but I am confident that this is an error due to the fact that this pretty plant grows very commonly in places where the trailing form of the Poison Ivy occurs. Children when poisoned have indicated their playgrounds, and parents going there have discovered the blue-eyed grass, and have at once jumped to the conclusion that the latter was the cause of the poisoning, overlooking the really poisonous plant, the Poison Ivy.

The Wild Iris (*Iris versicolor*), although occurring in Nebraska and said to be poisonous, has not been reported as doing damage to domestic animals.

Among the Orchids the common yellow Lady's Slipper (*Cypripedium hirsutum* and *C. candidum*) are fairly common in many localities, but, although these are known to be more or less poisonous to the touch to many people, no cases have yet been reported to me of such poisoning in Nebraska.

In the Buttercup Family, although there are many species of Buttercups proper, Anemonies and related plants, no cases are reported of poisoning from these. The Larkspurs, however, are sometimes seriously harmful. Several years ago, specimens were sent to me from western Nebraska with the statement that many cattle had died from eating of them. This particular Larkspur is the Nelson Larkspur (*Delphinium nelsoni*), which has come into the State from the far west. It is known to be poisonous in the cattle country farther west, and, while not abundant in Nebraska, has done much damage in certain years. Its clustered leaves push up early in the spring and offer tempting mouthfuls to the hungry cattle. Later in the spring when the grass has appeared, the animals do not touch the Larkspur. Among the cattle men this Larkspur is known under the name of Poison Weed.

The Poppy Family is abundantly represented by a species of wild Poppy (*Argemone intermedia*), which grows throughout the greater part of the State. While it doubtless contains the same poisonous principle as that which is present in other members of the family, the great prickliness of the plant serves the double purpose of protecting it as well as the animals which might be tempted to feed upon it.

The Corn Cockle (*Agrostemma githago*) is not abundant in Nebraska, but with the increase in the growth of winter wheat it is rapidly increasing. It is known to be a poisonous plant so far as its seeds are concerned, and must be included in the list of such plants for the State.

Bouncing Bet (*Saponaria officinalis*) was introduced many years ago into old-fashioned gardens, and it now is showing a tendency to spread in a weedy manner. As it is more or less poisonous it is adding to the danger to domestic animals.

The Pokeweed (*Phytolacca decandra*) a well known poisonous plant, has barely entered the State. I doubt whether it is naturally a native of any portion, but at the present time it is found in the extreme southeastern corner of the State. It appears to be spreading westward.

In the Four-o'clock Family there is a genus (*Allionia*) of wild Four-o'clocks which have the appearance of being poisonous. I cannot prove my suspicion in regard to these plants, but am so fully convinced that they are poisonous that I must include them here. They are weedy, and on this account alone are worthy of condemnation.

In the central and far western portions of the State are many species of *Eriogonum*, and as some of these are reputed to be poisonous they must be included in this statement. They have no representatives in the East.

The Ailanthus tree (*Ailanthus glandulosa*), which has been introduced in the southern portion of the State, has been shown by Professor Rusby to be very poisonous. This adds another to the several counts against this bad-smelling tree. It would seem to me that in spite of the tropical beauty of the foliage a tree of such poisonous properties should not be generally planted.

Nebraska has the usual nettles with their irritating poison giving rise to the unpleasant results following contact.

The Osage Orange (*Toxylon pomiferum*) which has been shown by Dr. Halsted to be more or less harmful as an external poison, is very commonly grown in the southern portion of the State, and it thus adds another to the plants to be avoided by some people. Although I am quite sensitive to some of the external poisons, I have myself never experienced any bad effects from handling the leaves or fruit of the Osage Orange.

One of the most abundant wild plants of the Plains is the Snow-on-the-mountain (*Euphorbia marginata*). It is a pretty weed and is even on the Plains brought into cultivation, on account of the beauty of its upper leaves. I have not known of any person being poisoned by the foliage or the milky juice, although the plant is reputed to be very poisonous in these particulars. Dr. Halsted speaks of the honey obtained from these plants as being "hot and disagreeable to the taste." Several years ago, honey of just this description was brought to my laboratory for examination, and I have now no doubt that it was obtained from these plants, as they are very abundant in the vicinity of Lincoln.

Seeds of the Castor Oil plant (*Ricinus communis*) have been known to cause the death of domestic animals in eastern Nebraska. A few years ago, during a time when there was a scarcity of corn for feeding to horses, several carloads were brought from Missouri, and in this corn were many seeds of the Castor Oil plant. A number of horses were killed by eating of the corn. Specimens were brought to me for identification at the time.

Although the Morning-Glories are reputed to have a poisonous property in their underground parts, no reports of injury have come to me. I was interested several years ago in the Big-Rooted Morning-Glory

(*Ipomoca leptophylla*), which has a root nearly a foot in diameter and three feet long. When fresh it is very watery, and I can testify to a pecular astringency and unpleasant quality in the fresh juice. I did not take enough to pro. duce more than temporary inconvenience. I have no doubt that a gill or so of the fluid would produce serious results.

Of the Nightshades several species are known on the Plains. The Black Nightshade (*Solanun nigrum*) is the most common. It has frequently been accused of producing serious results, and yet I have known of its little, black, berries being used as human food without any harm. The same is true of the Spreading Nightshade (*Solanum triflorum*), which is common farther west and which differs from the preceding in having much-lobed leaves and larger berries. These berries, also, have been commonly used by the settlers on the Plains; yet both of these species are certainly poisonous to domestic animals. Two other wild species, namely, the Buffalo Bur (*Solanum rostratum*) and the Horse Nettle (*Solanum carolinense*) are probably poisonous, but here again the great prickliness of the foliage is a protection to the domestic animals.

The Jimson Weed (*Datura stramonium*) is spreading over the Plains rapidly. A few years ago no specimens were to be seen about Lincoln. Now the weed is common, and I have seen it fifty or a hundred miles farther west. It is known to be poisonous, and is to be avoided on this account.

Both species of Dogbane, namely, the Spreading Dogbane (*Apocynum androsæmifolium*) and the Indian Hemp (*A. cannabinum*) are rather common throughout the State. They are known to be poisonous plants.

The most common species of Milkweed is the Showy Milkweed (*Asclepias speciosa*), which has been under suspicion in Montana as a poisonous weed. It is a pretty plant, but on account of its weedy habit is to be exterminated.

In the Plum Family the Wild Black Cherry (*Prunus serotina*) and the Choke Cherry (*P. virginiana*) are not widespread in the State, occurring only in a narrow belt extending westward from the Missouri River a short distance. Their leaves when wilted contain a deadly poison, prussic acid. From central Nebraska westward the Dwarf Wild Cherry (*Prunus demissa*) is very common, and as this is a dwarf representative of the common Wild Black Cherry there is no question as to its containing the same poisonous principle as the eastern tree. The leaves in the fresh state are cropped with impunity by domestic animals as they pass through the thickets, but it is well known that this may be done also for the Wild Black Cherry. I have no doubt that when the Dwarf Wild Cherry leaves are wilted they will develop the same fatal poison as the other species.

The Kentucky Coffee Tree (*Gymnocladus dioica*), whose leaves and pulp in the pods have been shown to be poisonous, occurs in a belt extending from southern Nebraska eastward to the Missouri River and northward to the Dakota line, at no place departing more than fifty or a hundred miles from the river itself.

On the Plains a little distance west of Lincoln grows a very silky-hairy, herbaceous plant which is known to all the cattle men as a Loco Weed (*Astragalus mollissimus*). Although this plant has been discussed for many years, there is still some question as to exactly how it produces its serious effects. There are some people still who doubt whether the plant is the cause of the trouble. I am myself, however, quite of the opinion that this is one of the poisonous plants of the State.

The Crazy Weeds are related to the Loco Weed, but they belong to a separate genus. The commonest Crazy Weed (*Aragallus lambertii*) occurs from western Iowa westward, and from all the testimony at my command I am sure that it has done much damage.

The Rattlebox (*Crotalaria sagittalis*) occurs in eastern Nebraska, and the same trouble which has been described as occurring in western Iowa occurs in eastern Nebraska.

The White Tumbleweeds (*Psoralea tenuiflora*) and other species are apparently somewhat similar to the Loco Weeds and the Crazy Weeds in their poisonous effects. Several species are very common throughout Nebraska.

The Poison Ivy (*Rhus radicans*) is abundant throughout the State. It is more common as a trailing plant upon the ground, but this is simply because of the absence of supports upon which it may climb. As soon as a support is available it climbs as high as the forms which grow in the woodland. In regard to the poisonous principle in this plant I cannot agree with Dr. Pfaff, of Harvard University, that it is an absolutely non-volatile oil. I cannot doubt that the non-volatile oil which he secured is poisonous, but I have the best of personal evidence that a volatile principle also is poisonous. Many years ago, while in Iowa, an assistant brought into my laboratory a tin box full of plants, among which were many flowering specimens of Poison Ivy. The day was hot, and the assistant had walked in the sun for a mile or more in bringing in the plants. Knowing my susceptibility to Poison Ivy poisoning, he warned me not to touch the tin box or its contents. I therefore asked him to open the box while I looked on and selected the plants which I wished him to preserve for pressing. As the box was opened I leaned over it and looked in, being very careful, however, not to come into contact with the box or the plants. As the assistant took up plant after plant I pointed to others and ask him in regard to the stations where he secured them. I was very careful as I had been severely poisoned many times before and did not wish to have another experience of the discomfort. Yet in a day or two I found myself suffering with the usual inflammation, with this difference, that the surfaces affected were those only which had been directly exposed when I leaned over the box of plants. My face was much inflamed except where my beard, mustache, eyebrows and nose made projecting protections. Above these there were small areas entirely free from inflammation. The underside of my eyebrows (the "overhang") was thoroughly poisoned, and so was the inside of my nose, (the nostrils.) My right hand was severely poisoned; but here again the distribution of the inflammation was confined to the parts directed downward as I pointed at the various specimens in the box. Thus, the middle and proximal joints of the second, third and fourth fingers, and the underside of the wrist of that hand were badly affected, while the upperside of the hand was not poisoned at all.

My left hand was not poisoned, and I account for this by the fact that it was kept back and not used in pointing out plants. I am confident that poisoning may take place without direct contact, and this indicates that Dr. Pfaff secured but a part of the poisonous principle when he isolated a non-volatile oil.

Probably the most dangerous plant in the state is the Water Hemlock (*Cicuta maculata*) which is widely distributed throughout the State. More cases of destruction of domestic animals have been referred to this plant than to any other. It is so well known that I need not discuss it here. Other members of the Parsley Family are rather common, and they have been suspected by stockmen of producing poisoning, but of this I am not certain.

On the Plains there are the usual members of the Sunflower Family in the broader sense, and they are probably as poisonous there as elsewhere, yet no complaints have come in regard to them. I may merely mention the Prairie Pink (*Lygodesmia juncea*), the Cocklebur (*Xanthium strumarium*), the tall Cone-flower (*Rudbeckia laciniata*), the Sneeze-weed (*Helenium autumnale*), and related plants, all of which in other portions of the United States are reputed as poisonous. In the paper to which I have refered I have noticed about a dozen plants reputed to be poisonous to man externally, twenty-nine reputed to be poisonous to man internally, and thirty-five reputed to be poisonous to a greater or a less degree to stock.

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